REMARKS

Claim 38 is amended. Claims 39-41, 44 and 45 are cancelled. Claims 46-54 are added. Claims 38, 42, 43 and 46-54 are in the application for consideration.

The specification is amended to provide literal language support for the claims. No new matter is added, as support therefore is clearly shown in the drawings of the patent application as filed. Specifically, Fig. 5 illustrates crystal size in layers 18 and 20 being substantially the same even though there is a perceptible change in crystallinity from one layer to another. Further, the preferred entire dielectric region between electrodes 16 and 22 consist essentially of layers 18 and 20. Accordingly, no new matter is added thereby.

Claim 38 is amended to recite that the layers are the same stoichiometric capacitor dielectric material. Such is inherently supported from Applicant's specification where clearly the identical, same capacitor dielectric material is what is contemplated and disclosed. Further, claim 38 is amended to recite that both of the discrete layers are crystalline and that an interface exists therebetween which is characterized by a perceptible change in crystallinity from one layer to the other. Further, the perceptible change in crystallinity is characterized by a perceptible lateral shift in grain boundaries from one layer to the other. (Specification as filed at p.8, lns.14-17). Further, claim 38 is amended to recite that the crystal size in the one and

the other layers are substantially the same. Each of the cited Roh and Matsuda et al. layers are lacking in this regard.

Specifically, Roh is entirely silent as to the crystallinity of its prior art disclosure, and its subject teaching of deposition/anneal/deposition/anneal essentially describes the prior art which Applicant refers to in its Background section, which would not be believed to result in the formation of two discrete layers in spite of their Fig. 1 depiction of the same.

Regarding Matsuda et al., such clearly only discloses, in the context of Applicant's amended claims, making the crystal size of the outer layer versus the inner layer smaller and is, accordingly, not the same as Applicant claims.

The secondary Gnade et al. and Fujii et al. references are equally inapplicable.

Accordingly, Applicant's independent claim 38 as amended should be allowed, and action to that end is requested.

Dependent claims 46-54 are added. All dependent claims should be allowed as depending from allowable base claims, and for their own recited features which are neither shown nor suggested in the cited art.

This application is believed to be in immediate condition for allowance, and action to that end is requested.

Respectfully submitted,

Dated: 12-16-02 By: _____

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 09/428,125
Filing Date . . . . . October 26, 1999
Inventor . . . . . Vishnu K. Agarwal et al.
Assignee . . . . . Micron Technology, Inc.
Group Art Unit 2822
Examiner . . . . . K. Rose
Attorney's Docket No. MI22-1299
Title: Capacitors and Methods of Forming Capacitors

VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING RESPONSE TO OCTOBER 31, 2001 OFFICE ACTION

In the Specification

The replacement specification paragraphs incorporate the following amendments. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

The paragraph beginning at line 3 on page 8 has been amended as follows:

> Accordingly in the above-described preferred embodiment, first layer 18 of the capacitor dielectric layer material is essentially provided with a selected finished crystalline structure prior to formation of second layer 20 thereon. Such is achieved by the crystallization or recrystallization anneal immediately prior to formation of layer 20. Also in the preferred

embodiment, the final composition of second layer 20 of the first material is also desirably formed to be crystalline, although alternately such could remain amorphous if so initially deposited. In the preferred embodiment for a capacitor dielectric layer where both of layers 18 and 20 are crystalline in their final form, an interface line 19 essentially forms therebetween where such discrete layers contact (Fig. 5). Interface line 19 is characterized by a perceptible change in crystallinity from one layer to the other, such as shown or evidenced in this example by a substantial lateral shift or displacement in grain boundaries from one layer to the other. Preferably as shown in Fig. 5, crystal size in layers 18 and 20 is substantially the same in spite of the perceptible change in crystallinity, and the entire dielectric region between electrodes 16 and 22 consists essentially of layers 18 and 20.

In the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

38. (Amended) A capacitor comprising a pair of capacitor electrodes having capacitor dielectric material therebetween comprising a composite of two immediately juxtaposed and contacting, yet discrete, layers of the same stoichiometric capacitor dielectric material, both of the discrete layers being crystalline, and comprising an interface where the discrete layers contact which is characterized by a perceptible change in crystallinity from one layer to the other, the perceptible change in crystallinity being characterized by a perceptible lateral shift in grain boundaries from one layer to the other, crystal size in the one and the other layers being substantially the same

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